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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Thomas Evans

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EXAMINER

GAKH, YELENA G

ART UNIT

PAPER NUMBER

1797

NOTIFICATION DATE

DELIVERY MODE

07/10/2008

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Advisory Action</b> <b>Before the Filing of an Appeal Brief</b>	<b>Application No.</b> 10/723,810	<b>Applicant(s)</b> EVANS ET AL.	
	<b>Examiner</b> Yelena G. Gakh, Ph.D.	<b>Art Unit</b> 1797	

**--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

THE REPLY FILED 24 June 2008 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.  
 b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### NOTICE OF APPEAL

2. ☐ The Notice of Appeal was filed on \_\_\_\_\_. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

#### AMENDMENTS

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because  
 (a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);  
 (b) ☐ They raise the issue of new matter (see NOTE below);  
 (c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or  
 (d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).  
 5. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.  
 6. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).  
 7. ☒ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☒ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.  
 The status of the claim(s) is (or will be) as follows:  
 Claim(s) allowed: \_\_\_\_\_.  
 Claim(s) objected to: \_\_\_\_\_.  
 Claim(s) rejected: 1-8, 11-20, 22-37, 39 and 40.  
 Claim(s) withdrawn from consideration: 9, 10, 21, 23 and 24.

#### AFFIDAVIT OR OTHER EVIDENCE

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).  
 9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing a good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).  
 10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

#### REQUEST FOR RECONSIDERATION/OTHER

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:  
See Continuation Sheet.  
 12. ☐ Note the attached Information *Disclosure Statement*(s). (PTO/SB/08) Paper No(s). \_\_\_\_\_.  
 13. ☐ Other: \_\_\_\_\_.

/Yelena G. Gakh/  
 Primary Examiner, Art Unit 1797

Continuation of 11. does NOT place the application in condition for allowance because: the amendment does not overcome any rejections established in the previous Office actions; the Applicants' remarks have been fully considered but they are not persuasive for the following reasons:

Objection to the specification. Regarding terminology for "forensic authentication markers", "dynamic response authentication markers" and corresponding technologies, it appears that the Applicants consider these types of markers and corresponding techniques the essence of their invention. This prompted the examiner to request a more detailed explanation from the Applicants of the difference between e.g. "forensic authentication markers", and conventional markers, to which no appropriate response has been received. The statement from the Applicants, that the Applicants can be their own lexicographers, is not relevant to the examiner's inquiry, as to what the Applicants consider different for the forensic authentication markers comparing to conventional markers. The Applicants' definition of "forensic analytical marker" as "one or more organic or inorganic functional groups or structures that are not originally present in the chemical structure of the polymer in an amount or configuration detectable by a forensic analytical technique but which, when incorporated with the substrate polymer, result in a tagged polymer that has a unique signal detectable by a forensic analytical method" (paragraph [0036]) does not make them different from any conventional markers.

Regarding the definition "dynamic response authentication markers", the Applicants continue to state that optical markers are not spectroscopic markers, although, as it is well known to any routineer in the art, optical analytical techniques are a part of spectroscopic techniques. In the instant remarks the Applicants still has not answered the question, as to what is the difference between optical and spectroscopic tags, which makes these unclear, as to how spectroscopic tags can be differentiated from the optical tags.

The Applicants further did not respond to the examiner's request to give a more discernable definition for dynamic and forensic analytical techniques, which is important for a person of ordinary art in order to practice the invention in metes and bounds of the claim recitation. Description of forensic analytical techniques as "analytical methods that generally require significant expenditures with respect to equipment and/or preparation" cannot be considered clear and definite, since for most analytical techniques there are expensive and cheaper versions of equipment, including NMR spectrometers, which can be an extremely expensive equipment for e.g. proteomic analysis, along with simple and cheap desk NMR spectrometers for simple identification of compounds. FTIR spectrometers can be quite expensive (vibrational dynamic technique), and therefore should belong to forensic techniques, rather than to dynamic spectroscopic techniques. The following excerpt from the Applicants' remarks is also unclear: "[m]oreover, as disclosed in Paragraph [0063], 'the forensic analytical techniques will provide a determination of the structure of the forensic authentication marker as opposed to measuring a signal such as fluorescence or absorption.'". In fact, absorption spectrometric techniques (or IR, UV-Vis, etc. spectroscopy, if this is what is meant by the "absorption spectrometry" by the Applicants), give absorption spectra characteristic for the compounds, i.e. their fingerprints. Therefore, this distinction is also not very clear.

Rejection of claims 15 and 34 under 35 U.S.C. 112, first paragraph.

The Applicants remarks regarding amended claims 15 and 34 are not apparent. First, the Applicants amend the claims to overcome the examiner's rejection, and after that they argue over the rejection, which is not applicable to the newly amended claims. The examiner does not consider this a proper response to the rejections established in the previous Office action. If the Applicants amend the claims in order to overcome the examiner's rejection, which also means that the Applicants agree with the examiner's rejection, the mere statement from the Applicants that the rejection is overcome by the amendment would be considered sufficient for the Applicants' response. It is not necessary to cite different court cases, which are not relevant to the subject matter of the rejection, since it becomes moot in view of the amendment.

Rejection of claims under 35 U.S.C. 112, second paragraph.

The problems with clarity and definiteness of the terminology used by the Applicants in the claims, such as "forensic authentication markers", "dynamic response authentication markers" and corresponding techniques, which makes the metes and bounds of the claim recitation unclear for a practitioner of the invention, are outlined above.

Regarding effect of the marker on the optical properties of the substrate, claim 2 recites the following: "Claim 2. (Original) The method of claim 1 wherein the compound comprising the forensic authentication marker is present in the tagged polymer in an amount that does not affect an optical or rheological property of the substrate polymer." Since the claim recites further limitation for the parent claim, and it should be clear for a routineer in the art, as to which amounts of the marker can affect the optical properties of the substrate, if any, the examiner asked the Applicants, as to how the authentication marker could affect the optical property of the substrate material. To this question the Applicants "submit the claims are not indefinite, because optical properties of the substrate material can be affected by the authentication marker if the authentication marker reacts with the substrate material." (Remarks from 01/25/08). The examiner indicated that the authentication markers by definition should not react with the substrate, because then they are not markers, but rather the reagents. The markers the way they are defined in the specification should not react with the substrate, and therefore the limitation of claim 2 renders is unclear and indefinite. The instant remarks repeated the same argument - if the markers react with the substrate. Again, the markers should be inert toward the substrate by definition. Therefore, the question regarding the language of claim 2 and dependent claims remains open.

Regarding claim 7, the term "resonance spectroscopy" includes both different types of techniques, according to Applicants' own definition, "forensic" and "dynamic response", since some of the resonance spectroscopies, such as NMR and EPR, can belong to "forensic technique", while Raman resonance spectroscopy can belong to "dynamic resonance technique". Therefore, it is not clear, as to which one of two groups for techniques the resonance spectroscopy belongs according to the Applicants' definition, which renders the claim unclear and indefinite.

Rejection of claims 11-15 was not based on the question, as to how it is possible to measure the amount of forensic marker in the

polymer, but how the polymer with such specific amount of the marker is obtained in the first place, because in claims 16-17 this marker is recited as the functional group of the polymer. The claims do not recite the method of measuring the amount of the forensic marker in the polymer, but rather the amount of the marker in the polymer. The question was, as to how it is possible to obtain the amounts of the forensic marker recited in the claims, when the forensic marker is the functional group of the polymer. The question is not answered.

The question to the subject matter of claim 16 is not answered either, since alkyl groups with 2 or more carbon atoms are always present in the polymer, and there is no way to differentiate them from the marker, contrary to the recitation of the claim. What is a "configuration" for the alkyl groups with the number of carbon atoms more than 2?

Regarding claim 18 the Applicants repeated the same language, which the examiner questioned. The examiner specifically asked, whether the claim recited two polymers, one overlaying another, with the first polymer being a substrate, and the second comprising the fluorescent authentication marker. The examiner expected the Applicants to answer "Yes" or "No", with a more elaborate explanation of the recitation if the answer were "No". In this case, the examiner would interpret the claims according to the Applicants' explanation. Instead the Applicants repeated the same language, which raised the question of unclarity and indefiniteness, which did not resolve the issue. Furthermore, the Applicants even stressed that "the specification explains differences between compounds and polymers", and at the same time claim that "the compound .. is a polymer" (Claim 18). This seems to be quite contradictory remark on the Applicants' side.

The examiner withdraws rejection over claim 19.

Claim 20 and 22 are unclear, since copolymer cannot be defined through only one component. If a copolymer is recited in the claim, in order for the claim to be clear and definite, copolymer should be recited with both components clearly indicated in the claim. Furthermore, the claims should recite complete chemical names, if the abbreviations are not conventional.

Claim 28 recites a ridiculous number for detecting a taggant in the amount of 10-18 of the weight percent. It is not apparent, as to which explanation the examiner is supposed to provide to the Applicants in order to indicate that this number is totally unrealistic. The examiner indicated in the objection to the specification (see final rejection from 04/24/08): "[t]he examiner did not find the promised examples for loadings of the tag of 10-4 wt.%, not mentioning 10-6 wt.%, 10-12 wt.%, or 10-18 wt.%. The examiner respectfully requests the Applicants to provide any evidence for detection sensitivity of any optical technique in the indicated ranges. It appears that the Applicants suggest measuring femtograms of the taggant in kilograms or tons of the polymer." (Pages 4-5).

Regarding claim 33, the Applicants indicate that other techniques, such as NMR, XPS-ESCA, and ESR, can be used in order to provide determination of the structure of the forensic authentication marker. First, solid state NMR (if this is what is meant by the NMR spectrometry, which does not require dissolving the particle) is not a sensitive technique, especially for polymer materials. ESR is a liquid state technique. As for XPS-ESCA, according to its definition, "XPS, also known as ESCA, is the most widely used surface analysis technique because of its relative simplicity in use and data interpretation. The sample is irradiated with mono-energetic x-rays causing photoelectrons to be emitted from the sample surface. An electron energy analyzer determines the binding energy of the photoelectrons. From the binding energy and intensity of a photoelectron peak, the elemental identity, chemical state, and quantity of an element are determined. The information XPS provides about surface layers or thin film structures is of value in many industrial applications including: polymer surface modification, catalysis, corrosion, adhesion, semiconductor and dielectric materials, electronics packaging, magnetic media, and thin film coatings used in a number of industries." (see <http://www.phl.com/techniques/xps.html>). Thus it can detect only the first molecular layer of the article, which does not appear to be what is claimed in the instant application.

Regarding rejections over the prior art, it appears that the examiner specifically indicated that Livesay discloses both a forensic analytical marker detectable by a forensic analytical technique (electron paramagnetic resonance spectroscopy) and dynamic response authentication marker detectable by dynamic response technique (optical, visual), since the particles are detected visually due to their specific shape and size, and with EPR, due to their chemical nature. It's not clear, as to what specifically Livesay does not teach in regards to the indicated claims.

Regarding rejection over Matsumoto, a mere Applicants' statement, "Applicants respectfully submit that micro-fibers and a digital signature as disclosed by Matsumoto, are not a compound comprising a forensic authentication marker and a dynamic response authentication marker", without any explanation, as to why this is so, cannot be considered convincing.

The Applicants' arguments regarding obviousness rejections cannot be considered convincing. The examiner repeats the obviousness rejection:

#### Claim Rejections - 35 USC § 103

Claims 1-8, 11-20, 22, 25-37 and 39-40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cyr et al. (US 6,099,930, IDS) in view of Davis et al. (6,001,953, IDS) and e.g. Buess et al. (US 6,411,208).

Cyr teaches "methods for marking digital compact discs as a means to determine its authenticity", wherein the methods comprise incorporating a near infrared fluorophore into the CD by "coating, admixing, blending or copolymerization and in an amount to impart a detectable fluorescence from the fluorophore when exposed to electromagnetic radiation" (Abstract). Fluorophore is a dynamic response authentication marker. "A preferred material for use as a substrate is a thermoplastic, desirably, polycarbonate having the near infrared fluorophore incorporated therein. The near infrared fluorophore composition can be copolymerized with the polycarbonate, admixed into the polycarbonate, or coated onto the surface of the polycarbonate. If the latter application methodology is chosen and the near infrared fluorophore is coated onto the substrate layer 12, it is preferable that the near infrared fluorophore be located adjacent to the second surface 15 of the substrate 12" (col. 3, lines 49-59).

Cyr does not specifically teach a different forensic authentication marker and using a different analytical technique for further authentication.

Davis discloses various compositions used for manufacturing optical articles based on polycarbonates, including DMBPC (col. 21, Example 8). Since the content of such compositions is optimized for obtaining the best properties required for specific applications of CD and therefore the compositions are specific, it would have been obvious for any person of ordinary skill in the art at the time the invention was made to use the composition of the articles as an authentication signature; it is especially true, since such analytical techniques as NMR or NQR are well known for obtaining authentication signatures, as disclosed e.g. by Buess et al.

Therefore, it would have been obvious for a person of ordinary skill in the art to use two authentication techniques for such molded articles as CDs - the one based on fluorescence detection of fluorescence label incorporated into the CD polymer, as taught by Cyr, and the second based on the specific composition of the CD material disclosed by Davis, which can be obtained by analytical techniques well known for providing authentication signatures of the materials, such as NMR, EPR, etc., as indicated by Buess, because this enforces authentication capabilities and enhances prevention of forgery or counterfeiting. It would have been obvious for any person of ordinary skill in the art to optimize the amount of the markers in order to make them detectable (depending in the sensitivity of the analytical technique) and, on the other hand, not interfering with the substrate.

The examiner specifically indicated, as to why it would have been obvious for a person of ordinary skill in the art to use a combination of Cyr and Davis teachings in view of Buess: "because this enforces authentication capabilities and enhances prevention of forgery or counterfeiting".

Furthermore, the Applicants indicate that Buess discloses two different authentication techniques, applied to the same object, which examiner did not recite, but which supports motivation of the obviousness rejection.

The examiner does not agree with the Applicants' conclusion that the claims are novel and non-obvious over the prior art, and their arguments are not convincing.

Therefore, all rejections are sustained.